

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2007-_____

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF SAN JOAQUIN
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

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The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

1. The City of San Joaquin (hereafter City or Discharger) submitted a Report of Waste Discharge (RWD), dated 23 January 2007, for a modification and expansion (hereafter Expansion Project) of its wastewater treatment facility (WWTF). The RWD proposes to expand the existing WWTF from a monthly average discharge flow of 0.252 million gallons per day (mgd) to 0.5 mgd. The WWTF provides services for about 3,800 residents and limited light industry.
2. The WWTF is along Springfield Avenue, appropriately 1.5 miles southwest of the City, and 12 miles south of the City of Kerman, in Section 27, T15S, R16E, MDB&M, as shown on Attachment A, which is attached hereto and made part of this Order by reference.
3. Waste Discharge Requirements (WDRs) Order No. R5-2002-0103 adopted on 7 June 2002, restricted the monthly average discharge flow to 0.252 mgd. The WDRs prescribed effluent limitations on a quarterly average basis for 5-day biochemical oxygen demand (BOD₅), and settleable solids (SS). Cease and Desist Order No. R5-2002-0104 (CDO), adopted on 7 June 2002, required the Discharger to perform a series of tasks according to a time schedule to complete the expansion of the WWTF. The Discharger has not completed all the tasks of the CDO. An updated enforcement order to be considered separately requires the Discharger to complete the Expansion Project.
4. The purpose of this Order is to rescind WDRs Order No. R5-2002-0103 and prescribe requirements that reflect the Discharger's Expansion Project.
5. The RWD presents information on site conditions, the existing wastewater treatment process and quality, and the conceptual design of the Expansion Project. Attachment B, which is attached hereto and made part of this Order by reference, depicts a plan view of the existing WWTF and Expansion Project, as depicted in the RWD.

Existing Wastewater Treatment Facility

6. The existing WWTF consists of three lift stations (one with headworks), an unlined aerated pond (Pond 1), two sedimentation ponds (Ponds 2 and 3), and three evaporation and percolation ponds (Ponds 4 through 6). Attachment C of this Order, which is attached hereto and made part of this Order by reference, depicts a process flow diagram of the existing WWTF.

7. The WWTF's collection system is composed of 10 miles of gravity sewer lines, about one-half mile of 8-inch force main and two lift stations, which converge to a terminal lift station at Manning Avenue. The headworks is contained at the Manning lift station and consists of a 3-inch Parshall flume and a manually-cleaned bar screen immediately upstream of the lift station. Effluent is pumped from the Manning lift station to the WWTF one half mile to the west.
8. Wastewater from the Manning lift station is discharged to Pond 1. Pond 1 is approximately 6 ft deep with one foot of freeboard, has a total volume of 20.9 acre-ft and an average residence time of about 25 days. Aeration is provided by two 5 horsepower surface aerators operated on timers. Wastewater from Pond 1 is discharged through a splitter box into Ponds 2 and 3, which are operated in series. Ponds 2 and 3 are about 6 ft deep, and have a combined wastewater volume of 50 acre-ft. These ponds are above the initial clay layer, which helps restrict percolation.
9. Effluent from Ponds 2 and 3 discharge to evaporation/percolation Ponds 4, 5 and 6 (disposal ponds). The disposal ponds are about 12 feet deep each and have combined surface area and effluent storage capacity of about 13.3 acres and 155.3 acre-ft, respectively. These ponds are below the existing first encountered clay layer to enhance percolation. The Discharger also uses a borrow pit for emergency storage to provide additional capacity during heavy rainfall. The borrow pit will later be converted to a permanent disposal pond.
10. The Discharger currently disposes of sludge onsite by draining and drying the ponds and discing the residual sludge into soils underlying the ponds. City staff do not know the last time sludge was removed from the aeration pond.
11. Self-monitoring reports from 2006 indicate that winter flows are not higher than summer flows, demonstrating insignificant inflow and infiltration to the collection system during winter months.
12. Self-monitoring data from January 2006 to December 2006 characterize the discharge as follows:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Influent</u>	<u>Effluent</u>	<u>% Removal¹</u>
Monthly Average Discharge Flow	mgd	0.31	NS ²	--
Conventional Pollutants				
pH (range)	s.u. ³	7.4 – 8.0	8.0 – 9.1	--
Settleable Solids	mL/L	3.4	0.1	97
BOD ⁴	mg/L	218	19	91
TSS ⁵	mg/L	144	54	63
Salts				
Chloride	mg/L	NS	160	--
Sodium	mg/L	NS	240	--

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Influent</u>	<u>Effluent</u>	<u>% Removal¹</u>
EC ⁶	µmhos/cm	1,430	1,380	--
TDS ⁷	mg/L	NS	NS	--
Nitrogen Forms ⁸				
Nitrate as Nitrogen	mg/L	NS	<0.45	--
TKN ⁹	mg/L	NS	6.8	--
Ammonia as Nitrogen	mg/L	NS	<0.04	--
Total Nitrogen ¹⁰	mg/L	NS	6.8	--
Metals				
Aluminum	mg/L	NS	0.147	--
Iron	mg/L	NS	<0.05	--
Manganese	mg/L	NS	<0.04	--

¹ Percent removal (% removal)

² Not sampled (NS)

³ Standard units (s.u.)

⁴ 5-day biochemical oxygen demand (BOD)

⁵ Total suspended solids (TSS)

⁶ Electrical conductivity at 25°C (EC)

⁷ Total dissolved solids (TDS)

⁸ Based on three sampling events

⁹ Total Kjeldahl nitrogen (TKN)

¹⁰ Calculated by summing the concentrations of nitrate as nitrogen and TKN, and assuming the concentration of nitrite is negligible.

13. In 2002, the EC of the WWTF influent was about 640 µmhos/cm over source water; however, in the last year it has increased to about 900 µmhos/cm higher than source water EC. The City is investigating the cause of the increase.

Expansion Project

14. The design of the Expansion Project is not complete; however, the conceptual design is described below. Attachment C depicts a conceptual process flow diagram of the Expansion Project.

15. The RWD describes the City's plans to upgrade the existing headworks by replacing the existing Parshall flume with an ultrasonic flow meter in the force main, which will be housed in a new concrete vault immediately downstream of the lift station. The City will install new pumping equipment at the pump station to accommodate the increase in flow. The existing force main will also be evaluated and if necessary, replaced.

16. The RWD describes the City's plans to construct a new extended aeration biological treatment process to replace the existing mechanical surface aerated pond system. The treatment process will be operated to allow for de-nitrification. The WWTF will consist of an aeration basin, an integral clarifier, return and waste activated sludge pumps, a blower building, and sludge handling and storage facilities. The City has not determined the final placement of the primary aeration basin, which may be constructed by converting existing Pond 1, or constructing a new basin just north of Pond 1.
17. The water balance presented in the RWD indicates that the City will need approximately 40.5 acres of percolation area to dispose of 0.5 mgd. To obtain the necessary area, the City plans to convert Ponds 2 and 3 and possibly Pond 1 into disposal ponds. This will be achieved by lowering the pond bottom elevations beneath the existing clay layer to the permeable soil below, which will enhance percolation. In addition, the City intends to construct additional disposal ponds on existing City-owned land and an additional 25 acres south of the WWTF, which is not currently owned by the City. The City will purchase this property once funding is available. Attachment A depicts the locations of the existing and proposed disposal ponds.
18. The RWD indicates that the proposed discharge will achieve the following effluent quality.

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Monthly Average Discharge Flow	mgd	0.5	--
pH	s.u.	--	6.0-9.0 ¹
Settleable Solids	mL/L	0.1	0.2
BOD	mg/L	15	30
TSS	mg/L	15	30
Total Nitrogen	mg/L	10	15
EC	µmhos/cm	SW ² + 700	--

¹ Shown as a daily minimum and maximum range

² Source water

19. It is anticipated that effluent mineral and metals quality characterized in Findings 12 and 13 for the existing WWTF will be similar to the effluent quality resulting from the Expansion Project.

Sanitary Sewer Overflows

20. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the treatment facility. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.

21. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements For Sanitary Sewer Systems General Order No. 2006-003-DWQ (General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the order. The Discharger's collection system is greater than one mile in length; therefore, the General Order is applicable. The application or Notice of Intent (NOI) for coverage under the general permit must be submitted to the State Water Resources Control Board by 1 November 2007.

Water Recycling

22. WDRs Order No. R5-2002-0103 incorporated water-recycling specifications to allow for the City to implement water recycling. However, the City's plans for water recycling are not feasible at this time, as the City was unable to obtain long-term agreements with any of the near-by property owners.

Site-Specific Conditions

23. The WWTF is in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation and evaporation in the discharge area are about 10.7 inches and 68.4 inches, respectively, according to information published by California Department of Water Resources (DWR).
24. Areal soils consist of variable and nonuniform layers of sand, clay, silty sand, and clay sand, indicating stream deposition from the Fresno Slough sandy clay and sand. Soils within the WWTF and surrounding area include Merced clay according to the U.S. Soil Conservation Service (now the Natural Resources Conservation Service). The overall permeability of the surface soils exhibit slow to very slow permeability's with values ranging from about 0.06 to 2.0 inches per hour.
25. The WWTF is not within a 100-year floodplain according to Federal Emergency Management Agency maps.
26. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit for the WWTF because all storm water runoff is retained onsite and does not discharge to a water of the United States.
27. Land use in the WWTF vicinity is primarily agricultural, with the closest residential development approximately one mile away. The primary crops grown within five miles of the WWTF include cotton, alfalfa, corn (forage), tomatoes, and sugarbeets, according to DWR land use data published in 1994. Other crops grown northwest of the WWTF are grapes, and almonds but are not typical within the immediate vicinity of the City and WWTF. Most crops in this area are furrow irrigated, although some are sprinkler irrigated, according to the University of California Cooperative Extension. Irrigation water is supplied primarily by groundwater.

Groundwater Considerations

28. Regional groundwater is approximately 90 feet below ground surface and flows southeasterly, according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 1996. In the discharge vicinity, the “modified E-clay” layer occurs about 550 feet bgs and is about 80 feet thick, according to *Geology of Fresh Ground-Water Basin, Central Valley, California, with Texture Maps and Sections*, by R. W. Page (U. S. Geological Survey Professional Paper 1401 – C, Washington, 1986). The extensive clay deposits that characterize area soils have caused localized perched groundwater conditions. Shallow groundwater in the discharge vicinity is characterized by high salinity (i.e., EC concentrations of 2,000 to 4,000 $\mu\text{mhos/cm}$), according to information in *Areal Distribution of Electrical Conductivity in Shallow Groundwater*, San Joaquin Valley, published by DWR in Spring 1995.
29. Groundwater quality data for the uppermost, and groundwater just above the E-clay, is limited. A groundwater monitoring well network must be established and regular groundwater monitoring conducted to establish both background and downgradient groundwater concentrations for selected constituents.
30. Although hydraulic continuity between aquifers is restricted, agricultural wells within the vicinity are likely screened within the upper and lower aquifers to maximize well production. This uppermost layer has the potential to have hydraulic continuity between the two aquifers resulting in lower quality water from the uppermost aquifer to migrate into the lower higher quality aquifers just above and below the E-clay.
31. The City obtains its source water from three wells. With the exception of sodium, iron, and manganese, source water is of good quality, as indicated by the City’s 2004 Annual Water Quality Report. Concentrations of iron and manganese exceed the drinking water secondary maximum contaminant levels (MCL) specified in Title 22 of California Code of Regulations (CCR) of 0.3 mg/L, and 0.05 mg/L, respectively. Excerpts of this report are presented below.

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Range</u>	<u>Average</u>
Arsenic	mg/L	2.6 – 6.9	4.9
Bicarbonate	mg/L	102 – 138	1125
Chloride	mg/L	35.7 - 62.3	49.7
EC	$\mu\text{mhos/cm}$	400 – 620	530
Iron	mg/L	<0.002 – 2.6	0.9
Manganese	mg/L	0.153 – 0.200	0.179
Hardness	mg/L	28 – 40	23
Nitrate (as N)	mg/L	--	<2.0
pH	s.u.	7.4 – 7.6	--

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Range</u>	<u>Average</u>
Sodium	mg/L	90 - 160	90 – 160
TDS	mg/L	126 - 414	275

32. Order No. R5-2002-0103 did not require the City to monitor groundwater. The closest wells that monitor shallow groundwater in the uppermost aquifer are at the American Avenue Landfill (Landfill), which is approximately 5 miles northeast of the WWTF and upgradient of assumed groundwater flow direction. Depth to groundwater at the Landfill is about 100 to 130 feet bgs and varies in quality with respect to salts, nutrients, and metals. Water quality in the background groundwater wells at the Landfill range for the following constituents: EC (900 to 2,100 μ mhos/cm), nitrate as nitrogen (9.9 to 33 mg/L), iron (<0.02 to 0.26), manganese (<0.005 to 0.03), and aluminum (<0.025 to 0.180 mg/L).

Basin Plan, Beneficial Uses, and Water Quality Objectives

33. The Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition, (hereafter Basin Plan) designates beneficial uses, establishes numerical and narrative water quality objectives, contains implementation plans and policies for protecting all waters of the basin, and incorporates by reference plans and policies of the State Water Board. Pursuant to Section 13263(a) of the California Water Code (CWC), these waste discharge requirements implement the Basin Plan.
34. Water in the Tulare Lake Basin is in short supply, requiring importation of surface water from other parts of the State. The Basin Plan encourages recycling on irrigated crops wherever feasible and indicates that evaporation of recyclable wastewater is not an acceptable permanent disposal method where the opportunity existing to replace an existing uses or proposed use of fresh water with recycled water. As indicated in Finding 22 above, the City has attempted to obtain long-term agreements from area farmers for use of recycled water. The City will periodically investigate the possibility of recycling effluent in the future.
35. The WWTF is in Detailed Analysis Unit (DAU) No. 237 within the Kings Basin hydrologic unit. The Basin Plan designates the beneficial uses of groundwater in this DAU as municipal and domestic supply, agricultural supply, and industrial service supply.
36. The Basin Plan includes a water quality objective for chemical constituents that, at a minimum, requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that that the Regional Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
37. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Tastes and Odors, and Toxicity. The Toxicity objective, in summary, requires that

groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

38. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes several salt management requirements, including:
- a. The incremental increase in salts from use and treatment must be controlled to the extent possible, or limited to a maximum of 1,000 $\mu\text{mhos/cm}$. The maximum EC shall not exceed the EC of the source water plus 500 $\mu\text{mhos/cm}$. When the source water is from more than one source, the EC shall be a weighted average of all sources.
 - b. Discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000 $\mu\text{mhos/cm}$, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

These effluent limits are considered best practicable treatment or control (BPTC).

39. The list of crops in Finding 27 is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but is representative. Based on climate, and soil type, it is not likely that crops sensitive to salt and boron will be capable of being grown in the area; however, further information regarding the types of crops grown, background groundwater conditions, and overall effluent quality is necessary to make a final determination.
40. The Basin Plan requires municipal WWTFs that discharge to land to comply with treatment performance standards for BOD₅ and TSS. WWTFs that preclude public access and discharge less than 1 mgd must provide removal of 80 percent or reduction to 40 mg/L, whichever is more restrictive, of both BOD₅ and TSS.

Antidegradation Analysis

41. State Water Resources Control Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution No. 68-16) prohibits degradation of groundwater unless it has been shown that:
- a. The degradation is consistent with the maximum benefit to the people of the State;
 - b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
 - c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives; and

- d. The discharger employs BPTC to minimize degradation.
42. Constitutes of concern that have the potential to degrade groundwater include, in part, salts and nutrients. Groundwater underlying the WWTF has not been characterized; however, the Discharge will likely not degrade the beneficial uses of groundwater because:
- a. In general, groundwater within the vicinity of the discharge typically contains elevated concentrations of salinity, as measured by EC. Monitoring of shallow groundwater underlying the WWTF and a salinity source control study will provide information to confirm the discharge's consistency with Resolution No. 68-16 and the Basin Plan with respect to salinity.
 - b. Concentrations of nitrate as nitrogen and total nitrogen in the effluent characterized in Finding 12 are less than the water quality objective for nitrate as nitrogen of 10 mg/L. The proposed discharge characterized in Finding 18 will also contain nitrogen concentrations less than 10 mg/L and therefore not unreasonably degrade the beneficial uses of groundwater for nitrate.

Treatment and Control Practices

43. The Expansion Project described in Findings 14 through 19, once completed, provides treatment and control of the discharge that incorporates:
- a. secondary treatment;
 - b. a nitrogen removal treatment process;
 - c. appropriate biosolids storage and disposal practices;
 - d. an operation and maintenance (O&M) manual; and
 - e. certified operators to ensure proper operation and maintenance.
44. This Order establishes groundwater limitations for the WWTF that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order contains requirements for a groundwater investigation for assuring that the highest water quality consistent with the maximum benefit to the people of the State will be achieved.

Other Regulatory Considerations

45. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in Title 40, Code of Federal Regulations, Part 503, Standards for the Use or Disposal of Sewage Sludge, which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to EPA. The RWD states that all biosolids will be hauled to a separate permitted facility.

46. As the discharge consists of treated municipal sewage and incidental discharges from treatment and storage facilities associated with a municipal wastewater treatment plant, and as these discharges are regulated by waste discharge requirements consistent with applicable water quality objectives, the Facility and its discharge is exempt from containment pursuant to Title 27, Section 20090(a).

CEQA

47. The Discharger certified a mitigated negative declaration (MND) on 11 April 2007 in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et, seq.) and the State CEQA guidelines (Title 14, Division 6, California Code of Regulations, as amended). The MND indicates that the discharge will comply with Regional Water Board regulations, which will mitigate any groundwater impacts.
48. This Order implements measures necessary to mitigate any adverse impacts to groundwater from the Expansion Project to less than significant levels, including:
- a. Effluent Limitation B.1, which restricts flow to 0.252 mgd until the Discharger can treat and dispose of the proposed increase in discharge flow in accordance with the terms and conditions of this Order and the CWC.
 - b. Effluent Limitations B.2 and B.3, which establish effluent limitations consistent with the Basin Plan's performance standards.
 - c. Discharge Specification C.7, which stipulates waste constituents cannot be released or discharged in a concentration or mass that causes violation of the Order's groundwater limitations.
 - d. Provision G.4, which requires the City to implement groundwater monitoring.

General Findings

49. Pursuant to CWC Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.
50. The Regional Water Board will review this Order periodically and will revise requirements when necessary.
51. California Water Code Section 13267(b) states that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the

report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”

52. The technical reports required by this Order and the attached Monitoring and Reporting Program No. R5-2007-_____ are necessary to assure compliance with these waste discharge requirements. The Discharger operates the Facility that discharges the waste subject to this Order.
53. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 94-81 (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to California Water Code Section 13801, apply to all monitoring wells.

Public Notice

54. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
55. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
56. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that, Waste Discharge Requirements Order No. R5-2002-0103 is rescinded and that, pursuant to Sections 13263 and 13267 of the CWC, the City of San Joaquin and its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Bypass or overflow of untreated wastes, except as allowed by Provision E.2 of Standard Provisions and Reporting Requirements, is prohibited.
3. Discharge of waste classified as ‘hazardous’, as defined in Section 2521(a) of Title 23, California Code of Regulations, Section 2510 et seq., is prohibited. Discharge of waste classified as ‘designated,’ as defined in California Water Code Section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

B. Effluent Limitations

1. The monthly average discharge flow shall not exceed:
 - a. 0.252 mgd until the Expansion Project is complete
 - b. 0.5 mgd after Expansion Project is complete
2. Until the Expansion Project is complete, the effluent discharge to the disposal ponds shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Quarterly Average</u>	<u>Daily Maximum</u>
BOD ₅	mg/L	40	80

3. After the Expansion Project is complete, the effluent discharge to the disposal ponds shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD ₅	mg/L	40	80
TSS ¹	mg/L	40	80

¹ total suspended solids

4. After the Expansion Project is complete, the arithmetic mean of BOD₅ and TSS in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at appropriate the same times during the same period (80 percent removal).
5. The interim annual flow-weighted average EC of the discharge shall not exceed 1,500 µmhos/cm calculated on a monthly basis. This performance-based limit will be re-opened based upon completion of Provisions G.4 and G.5.

C. Discharge Specifications

1. All conveyance, treatment, storage, and disposal units shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
2. Public contact with effluent shall be precluded through such means as fences, signs, or acceptable alternatives.
3. Objectionable odors shall not be perceivable beyond the limits of the WWTF property at an intensity that creates or threatens to create nuisance conditions.
4. Disposal ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter. Design seasonal precipitation shall be based on total annual precipitation using

a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

5. On or about **1 October** of each year, available disposal pond storage capacity shall at least equal the volume necessary to comply with Discharge Specification C.4.
6. Ponds shall be managed to prevent breeding of mosquitoes. In particular,
 - a. An erosion control plan should assure that coves and irregularities are not created around the perimeter of the water surface.
 - b. Weeds shall be minimized through control of water depth, harvesting, and herbicides.
 - c. Dead algae, vegetation and other debris shall not accumulate on the water surface.
 - d. Vegetation management operations in areas in which nesting birds have been observed shall be carried out either before or after, but not during, the 1 April to 30 June bird nesting season.
7. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.

D. Sludge Specifications

Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has undergone sufficient treatment and testing to qualify for reuse pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation.

1. Sludge and solid waste shall be removed from screens, sumps, aeration basins, ponds, clarifiers, etc. as needed to ensure optimal plant operation.
2. Treatment and storage of sludge generated by the WWTF shall be confined to the WWTF property.
3. Any handling and storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary (i.e., no longer than two years) and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations of this Order.

4. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.
5. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water quality control board or State Water Board or a local (e.g., county) program authorized by a regional water quality control board. In most cases, this means the General Biosolids Order (State Water Board Water Quality Order No. 2004-12-DWQ, "General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities"). For a biosolids use project to be authorized by the General Biosolids Order, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.
6. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

E. Pretreatment Requirements

1. The Discharger shall implement the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:
 - a. Wastes that create a fire or explosion hazard in the treatment works;
 - b. Wastes that will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;
 - c. Solid or viscous wastes in amounts that cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;
 - d. Any waste, including oxygen demanding pollutants (BOD₅, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;
 - e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the treatment works is designed to accommodate such heat;
 - f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

- g. Pollutants that result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and
 - h. Any trucked or hauled pollutants, except at points predesignated by the Discharger.
- 2. The Discharger shall implement the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:
 - a. Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or
 - b. Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

F. Groundwater Limitations

- 1. Release of waste constituents from any treatment or storage component associated with the WWTF shall not cause or contribute to groundwater:
 - a. Containing constituent concentrations in excess of the concentrations specified below or natural background quality (as determined by Provision G.4 and updated as appropriate as a result of ongoing monitoring), whichever is greater:
 - (i) Nitrate as nitrogen of 10 mg/L.
 - (ii) Total coliform organisms of 2.2 MPN/100 mL.
 - (iii) For constituents identified in Title 22, the MCLs quantified therein.
 - b. Containing taste or odor-producing constituents, or toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses.

G. Provisions

- 1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as Standard Provisions(s).
- 2. The Discharger shall comply with Monitoring and Reporting Program (MRP) No. R5-2007-_____, which is part of this Order, and any revisions thereto as adopted by the Regional Water Board or approved by the Executive Officer. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger self-monitoring reports.

3. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with sections 415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
4. **Groundwater Investigation.** The Discharger shall conduct a groundwater investigation to establish background groundwater quality, and determine if the existing discharge has impacted or has the potential to adversely impact the beneficial uses of groundwater.

Groundwater Work Plan. The Discharger shall submit a Groundwater Work Plan (Work Plan) for the installation of groundwater monitoring wells necessary to investigate the areas affected and potentially affected by the WWTF and its discharge(s) to land. The Work Plan shall satisfy the information needs specified in the monitoring well installation section of Attachment D, *Standard Monitoring Well Provisions for Waste Discharge Requirements*. All wells shall comply with appropriate standards as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981), and any more stringent standards adopted by the Discharger or county pursuant to CWC §13801.

The Work Plan must also include:

- A description of the area's hydrogeology, existing wells (active and otherwise), local well construction practices and standards, well restrictions, and groundwater extraction and recharge patterns.
- A discussion of the potential horizontal and vertical extent of percolated effluent and adverse effects on receiving groundwater from the WWTF and its discharge(s) to land.
- A proposed groundwater well network that includes one or more background monitoring wells and sufficient number of downgradient monitoring wells to evaluate the performance of the WWTF and its ability to comply with the groundwater limitations set forth in this order.
- A proposed groundwater monitoring program to characterize groundwater for the constituents identified in the monitoring and reporting program. The program must identify the statistical methods that will be used to characterize groundwater **within one year** after groundwater well installation. Determination of groundwater quality shall be made using an appropriate statistical method [e.g., Title 27, Section

20415(e)(10)], and shall be based on representative data (typically from at least eight data points).

Technical Evaluation. Once representative data have been collected and groundwater characterized, the Discharger shall submit a technical report evaluating those constituents that threaten to degrade groundwater. The technical report shall also demonstrate that the treatment facilities, sludge handling and storage facilities, and effluent disposal resulting from the Expansion Project will not unreasonably degrade groundwater in accordance with Regional Water Board plans and policies and the CWC. This includes, in part, a comprehensive analysis of existing and anticipated crop patterns, soil, and climatic conditions, and potential impacts, if any, resulting from the percolation of or recycling with effluent EC values greater than 1,000 $\mu\text{mhos/cm}$.

The Discharger shall comply with the following compliance schedule in implementing the work required by this Provision:

<u>Task</u>	<u>Compliance Date</u>
a. Submit Groundwater Work Plan	15 November 2007
b. Implement Work Plan	15 February 2008
c. Complete monitoring well installation and commence groundwater monitoring	15 April 2008
d. Submit technical report: monitoring well installation report of results and initial analytical data	15 May 2008
e. Complete first year of groundwater sampling	15 May 2009
f. Submit Technical Evaluation for characterizing background groundwater quality and evaluation of discharge	15 July 2009

Technical reports and Work Plans submitted pursuant to this Provision shall be subject to the requirements of Provision G.3.

5. **Salinity Assessment.** By **1 September 2008**, the Discharger shall prepare and implement a control plan to reduce the salinity of its discharge. The control plan must identify and implement measures to reduce salinity in discharges from residential, commercial, industrial, and infiltration sources in an effort to meet the Basin Plan's salinity performance goal of 500 $\mu\text{mhos/cm}$ over source water. The control plan must include the following:
- An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.
 - An analysis of the methods that could be used to prevent the discharge of salinity into the Facility, including application of local limits to industrial or commercial

- dischargers techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of salinity to the WWTF.
- c. An estimate of load reductions that may be attained through the methods identified above.
 - d. A description of the tasks, cost, and time required to investigate and implement various elements in the salinity control plan.
 - e. A statement of the Discharger's salinity prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended salinity reduction activities for the immediate future.
 - f. A description of the Discharger's existing salinity control plan programs.
 - g. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the salinity control plan.
6. Upon completion of the tasks set forth in Provisions G.4 and G.5, the Regional Water Board will consider the evidence provided regarding groundwater and the discharge and reopen the WDRs to evaluate the effluent limitations and conditions of this Order to ensure consistency with water quality policies and plans and the CWC, as appropriate.
 7. The Discharger shall keep at the WWTF a copy of this Order, including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.
 8. The Discharger shall not allow pollutant-free wastewater to be discharged into the Facility collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means storm water (i.e., inflow), groundwater (i.e., infiltration), cooling waters, and condensates that are essentially free of pollutants.
 9. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Regional Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the time schedule. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
 10. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the appropriate Regional Water Board office.

11. The Discharger shall maintain and operate all ponds sufficient to protect the integrity of containment levees and prevent overtopping or overflows. Unless a California civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically). As a means of management and to discern compliance with this Provision, the Discharger shall install and maintain in each pond permanent markers with calibration that indicates the water level at design capacity and enables determination of available operational freeboard.
12. As a means of discerning compliance with Discharge Specification C.3, the dissolved oxygen content in the upper zone (1 foot) of effluent in disposal ponds shall not be less than 1.0 mg/L for three consecutive sampling events. Should the DO be below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board **within 7 days** and propose a remedial approach to resolve the low DO results **within 30 days**.
13. The Discharger shall apply best practicable treatment or control to comply with terms of this Order. In so doing, the Discharger must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also include adequate laboratory controls and appropriate quality assurance procedures. This Provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger only when the operation is necessary to achieve compliance with the conditions of the Order.
14. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Regional Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2007-_____
CITY OF SAN JOAQUIN WWTF
FRESNO COUNTY

-20-

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on _____.

PAMELA C. CREEDON, Executive Officer

List of Order Attachments on next page

Order Attachments:

Monitoring and Reporting Program

A Vicinity Map – WWTF

B. Plan View – Existing WWTF and Expansion Project

C. Process Flow Diagram

D. Standard Monitoring Well Provisions for Waste Discharge Requirements
Information Sheet

Standard Provisions (1 March 1991) (separate attachment to Discharger only)

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